CENTER FOR ASYNCHRONOUS CIRCUIT AND SYSTEM DESIGN

Can You Imagine...

. . . a personal computer that runs significantly faster than today's models because it does not depend on an internal clock to synchronize its various operations?

CENTER

The Center was established in 1997 to complete the development of software design tools that will allow engineers to efficiently design digital circuits that do not require global clocking circuits in order to operate.

TECHNOLOGY

While most of today's digital systems use a synchronous global clock to coordinate operations within an integrated circuit, the challenge of distributing such global clock signals becomes increasingly difficult as circuit densities increase. Asynchronous circuits do not require a global clock and therefore do not require clock distribution lines as traditional synchronous circuits do. Industry has not moved to asynchronous design in large part owing to a lack of computer aided design (CAD) tools supporting this technology. Meeting this need is the direct target of this Center. It is working with companies such as Intel and IBM not only to help solve their future asynchronous design problems, but also their current difficulties in the analysis and verification of high-speed integrated circuits.

ACCOMPLISHMENTS

The Center has filed its first patent application representing nearly 100 claims and is considered a major invention. Significant design verification work was completed at IBM's Austin Research Laboratory, the results of which have led to the funding of a new research proposal by Semiconductor Research Corporation and to an anticipated license agreement with IBM. The Center has entered into collaboration with **SONIC innovations**, a Utah company, designing digital hearing aids. A major new grant was also received from the National Science Foundation to explore asynchronous designs for digital communications
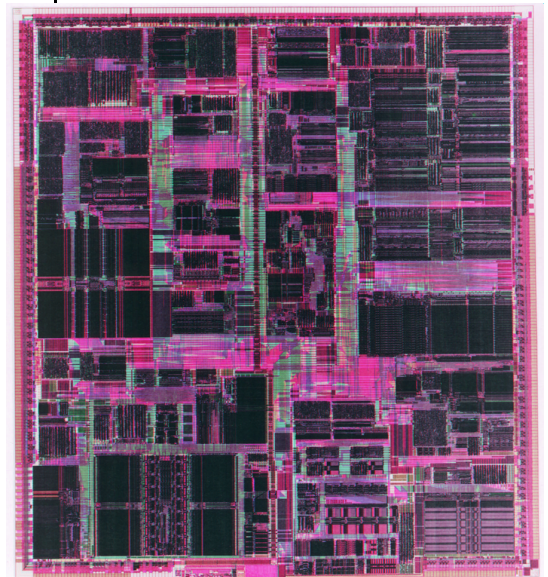
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THE CENTER DEVELOPS DESIGN TOOLS FOR DIGITAL ENGINEERS CREATING NEW MICROPROCESSORS

- The Intel P6 400 MHz microprocessor as seen through a microscope. Up to 30% of the surface area of a high speed microprocessor chip may be required to distribute clocking signals. (Photo courtesy of Intel Corporation)